The **Game Animation and Design degree** prepares students to create computer generated animation, design, and create video games, and incorporate the art assets into games. This degree program requires a minimum of 68 credits in program requirements and general education as listed below.

**Program Requirements** ............................................... 56

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 1199</td>
<td>Introduction to Game Industry</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1200</td>
<td>Game Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1201</td>
<td>Advanced Game Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1211</td>
<td>2D Game Development</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1400</td>
<td>Programming Logic and Technique</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2211</td>
<td>2D Game Scripting</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2212</td>
<td>3D Game Development</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2213</td>
<td>Advanced 3D Game Development</td>
<td>3</td>
</tr>
<tr>
<td>Mptv 1311</td>
<td>Introduction to Animation</td>
<td>3</td>
</tr>
<tr>
<td>Mptv 1313</td>
<td>History of Animation</td>
<td>3</td>
</tr>
<tr>
<td>Mptv 1320</td>
<td>Experimental Animation</td>
<td>3</td>
</tr>
<tr>
<td>Mptv 1324</td>
<td>Motion Graphics and Special Effects I</td>
<td>3</td>
</tr>
<tr>
<td>Mptv 2331</td>
<td>3-D Animation I</td>
<td>3</td>
</tr>
<tr>
<td>Mptv 2333</td>
<td>Motion Graphics and Special Effects II</td>
<td>3</td>
</tr>
<tr>
<td>Mptv 2340</td>
<td>Three-Dimensional Animation II</td>
<td>3</td>
</tr>
<tr>
<td>Mptv 2342</td>
<td>Animation Portfolio</td>
<td>3</td>
</tr>
<tr>
<td>Art 1101</td>
<td>Drawing I</td>
<td>3</td>
</tr>
<tr>
<td>Physi 1100</td>
<td>Physics</td>
<td>4</td>
</tr>
</tbody>
</table>

**General Education** ............................................... 12 to 14

Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the **Game Animation and Design degree**, some General Education courses are already listed under program requirements. Therefore, students need 12 to 14 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

**Communication:** 6 credits
- Written: (3 credits) English 1101 or 1105
- Oral: (3 credits) Speech 1100, 1120 or 1150

**Physical and Life Sciences:** 3 to 5 credits
- At least one course with a laboratory component.
- *(Physics 1100 in program requirements fulfills this requirement)*

**Mathematics:** 3 to 5 credits
- Select a minimum of 3 credits (1000 level or above).
- Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward

---

**Suggested Course Sequence**

(Full Time Enrollment)

Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

**First Semester (18 credits)**
- Cis 1199 (3)
- Cis 1200 (3)
- Mptv 1311 (3)
- MPTV 1313 (3)
- Art 1101 (3)
- Engli 1101 (3)

**Second Semester (19 credits)**
- Cis 1201 (3)
- Cis 1211 (3)
- Cis 1400 (4)
- Mptv 1320 (3)
- Mptv 1324 (3)
- Mptv 2331 (3)

**Third Semester (15 credits)**
- Cis 2211 (3)
- Cis 2212 (3)
- Mptv 2333 (3)
- Mptv 2340 (3)
- Math 1115 (3)

**Fourth Semester (16 credits)**
- Cis 2213 (3)
- Mptv 2342 (3)
- Anthr 1100 (3)
- Speec 1100 (3)
- Physi 1100 (4)

---

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

**Program web site:**
overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

**Humanities and Fine Arts:** 3 credits
*(Art 1101 in program requirements fulfills this requirement)*

**Social and Behavioral Sciences:** 3 credits

Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.
*(Cis 1400 in program requirements fulfills this requirement)*

<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>68 to 70</td>
</tr>
</tbody>
</table>
Career Information CIS.AAS.GAMEA

Job Title(s): Video Game Designers
Design Director, Designer/Writer, Game Designer, Game Designer/Creative Director, Lead Designer, Lead Game Designer, Lead Level Designer, Mid Level Game Designer, Senior Game Designer, World Designer

For salary and wage information, please visit: www.onetonline.org

If you would like information regarding internships, resume development, interviewing and job search skills, please contact the Career Services Center
Phone: 630-942-2230
www.cod.edu/careerservices Twitter: @codcareercenter
The Game Design and Development degree prepares students to design and develop computer games through application of game design elements and development tools used in the game industry. This degree program requires a minimum of 64 credits in program requirements, electives and general education as listed below.

**Program Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 1199</td>
<td>Introduction to Game Industry</td>
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</tr>
<tr>
<td>Cis 1200</td>
<td>Game Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1201</td>
<td>Advanced Game Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1211</td>
<td>2D Game Development</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1400</td>
<td>Programming Logic and Technique</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2211</td>
<td>2D Game Scripting</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2212</td>
<td>3D Game Development</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2213</td>
<td>Advanced 3D Game Development</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2230</td>
<td>Simulation and Serious Game Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2240</td>
<td>Cross-Platform Game Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2770</td>
<td>Introduction to System Analysis &amp; Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2790</td>
<td>Systems Analyst Simulation</td>
<td>3</td>
</tr>
<tr>
<td>Physi 1100</td>
<td>Physics</td>
<td>4</td>
</tr>
</tbody>
</table>

**Electives**

Select eight credits from any 1000- or 2000-level courses. (In addition to the courses listed above.)

**General Education**

Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Game Design and Development degree, some General Education courses are already listed under program requirements. Therefore, students need 15 to 17 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

**Communication:** 6 credits
- Written: (3 credits) English 1101 or 1105
- Oral: (3 credits) Speech 1100, 1120 or 1150

**Physical and Life Sciences:** 3 to 5 credits
- At least one course with a laboratory component.
  (Physics 1100 in program requirements fulfills this requirement)

**Mathematics:** 3 to 5 credits
- Select a minimum of 3 credits (1000 level or above).
- Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward

**Suggested Course Sequence (Full Time Enrollment)**

*Please note: A student’s readiness to perform college-level coursework is based on the student's placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.*

**First Semester (15 credits)**
- Cis 1199 (3)
- Cis 1200 (3)
- Anthr 1100 (3)
- Engli 1101 or Engli 1105 (3)
- Speech 1100 (3)

**Second Semester (16 credits)**
- Cis 1201 (3)
- Cis 1211 (3)
- Cis 1400 (4)
- Art 1100 (3)
- Math 1115 (3)

**Third Semester (16 credits)**
- Cis 2211 (3)
- Cis 2212 (3)
- Cis 2230 (3)
- Cis 2770 (3)
- Elective (4)

**Fourth Semester (17 credits)**
- Cis 2213 (3)
- Cis 2240 (3)
- Cis 2790 (3)
- Physi 1100 (4)
- Elective (4)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

**Program web site:**
http://www.cod.edu/programs/cis/
overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

**Humanities and Fine Arts:** 3 credits

**Social and Behavioral Sciences:** 3 credits

Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category. *(Cis 1400 in program requirements fulfills this requirement)*

<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>64 to 66</td>
</tr>
</tbody>
</table>
Career Information  CIS.AAS.GAMED

Job Title(s): Video Game Designers
Design Director, Designer/Writer, Game Designer, Game Designer/Creative Director, Lead Designer, Lead Game Designer, Lead Level Designer, Mid Level Game Designer, Senior Game Designer, World Designer

For salary and wage information, please visit:  www.onetonline.org

If you would like information regarding internships, resume development, interviewing and job search skills, please contact the Career Services Center
Phone:  630-942-2230
www.cod.edu/careerservices  Twitter:  @codcareercenter
Catalog Description

The Game Programming and Development degree prepares students to create and develop computer games using programming languages and development tools used in the game industry. This degree program requires a minimum of 64 credits in program requirements, electives and general education as listed below.

### Program Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 1199</td>
<td>Introduction to Game Industry</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1200</td>
<td>Game Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1211</td>
<td>2D Game Development</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1400</td>
<td>Programming Logic and Technique</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2211</td>
<td>2D Game Scripting</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2212</td>
<td>3D Game Development</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2213</td>
<td>Advanced 3D Game Development</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2220</td>
<td>Game Programming Using C++</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2250</td>
<td>Multiplatform Game Programming</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2252</td>
<td>Advanced Multiplatform Game Programming</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2420</td>
<td>Microprocessor Assembly Language</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2541</td>
<td>C++ Language Programming</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2542</td>
<td>Advanced C++ Programming</td>
<td>4</td>
</tr>
<tr>
<td>Physi 1100</td>
<td>Physics</td>
<td>4</td>
</tr>
</tbody>
</table>

* - course has a prerequisite

### Program Electives

Select three credits from any 2000- level Cis course. (In addition to the courses listed above.)

### General Education

Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Game Programming and Development degree, some General Education courses are already listed under program requirements. Therefore, students need 14 to 18 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

**Communication:** 6 credits
- Written: (3 credits) English 1101 or 1105
- Oral: (3 credits) Speech 1100, 1120 or 1150

**Physical and Life Sciences:** 3 to 5 credits
- At least one course with a laboratory component.
  *(Physics 1100 in program requirements fulfills this requirement)*

**Mathematics:** 3 to 5 credits
- Select a minimum of 3 credits (1000 level or above)

Suggested Course Sequence (Full Time Enrollment)

*Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.*

**First Semester (16 credits)**
- Cis 1199 (3)
- Cis 1200 (3)
- Cis 1211 (3)
- Cis 1400 (4)
- Engli 1101 or Engli 1105 (3)

**Second Semester (16 credits)**
- Cis 2211 (3)
- Cis 2212 (3)
- Cis 2541 (4)
- Art 1100 (3)
- Math 1432 (3)

**Third Semester (17 credits)**
- Cis 2213 (3)
- Cis 2250 (3)
- Cis 2542 (4)
- Physi 1100 (4)
- Speec 1100 (3)

**Fourth Semester (16 credits)**
- Cis 2220 (3)
- Cis 2252 (3)
- Cis 2420 (4)
- Anthr 1100 (3)
- Program Elective (3)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

**Humanities and Fine Arts:** 3 credits

**Social and Behavioral Sciences:** 3 credits

Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category. *(CIS 1400 in program requirements fulfills this requirement)*

| TOTAL CREDITS FOR AAS DEGREE | 64 to 68 |
Career Information  CIS.AAS.GAMEP

Job Title(s): Video Game Designers
Design Director, Designer/Writer, Game Designer, Game Designer/Creative Director,
Lead Designer, Lead Game Designer, Lead Level Designer, Mid Level Game Designer,
Senior Game Designer, World Designer

For salary and wage information, please visit:  www.onetonline.org

If you would like information regarding internships, resume development, interviewing
and job search skills, please contact the Career Services Center
Phone:  630-942-2230
www.cod.edu/careerservices  Twitter:  @codcareercenter
Computer Information Systems | Associate in Applied Science
Field of Study Code: CIS.AAS.SOFTW

Catalog Description

The Software Development degree program prepares students to work in the field of computer technology. This degree program requires 64 credits in program requirements, program electives, electives and general education as listed below.

Program Requirements ............................................................33
Cis 1150 Introduction to Computer Information Systems.............................3
Cis 1160 Windows Command Line ..............................................2
Cis 1180* Introduction to Networking ........................................3
Cis 1230* Microcomputer Database Application .........................3
Cis 1310* HTML and CSS .........................................................3
Cis 1400* Programming Logic and Technique ..............................4
Cis 1450* Introduction to Linux/Unix Operating Systems....................3
Cis 2330* Introduction to XML ................................................3
Cis 2770 Introduction to System Analysis and Design ......................3
Cis 2790* Systems Analyst Simulation .......................................3
Engi 1105* Writing for the Workplace ........................................3

Emphases Courses ..................................................................16
Choose One of the following Emphases: Software Development: C++, Java, Visual Basic (VB) or .NET

C++ Emphasis ........................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the C++ environment.
Cis 2541* C++ Language Programming ....................................4
Cis 2542* Advanced C++ Programming ....................................4

Java Emphasis ......................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the Java environment.
Cis 2571* Introduction to Java ................................................4
Cis 2572* Collections in Java ...................................................4

Visual Basic Emphasis .........................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the VB environment.
Cis 1510* Graphical User Interface Programming ....................4
Cis 2510* Advanced Graphical User Interface Programming ........4

.NET Emphasis ..................................................................12
This emphasis focuses on the creation, maintenance, and support of software applications in the .NET environment.
Cis 1510* Graphical User Interface Programming ....................4
Cis 2350* Introduction to ASP.NET .........................................4
Cis 2561* Introduction to C# .NET ...........................................4

Suggested Course Sequence
(Full Time Enrollment)
(C++ Emphasis)
Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

First Semester (15 credits)
• Cis 1150 (3)
• Cis 1160 (2)
• Cis 1400 (4)
• Engi 1105 (3)
• Math 1115 or 1428 or 1431 (3)

Second Semester (16 to 17 credits)
• Cis 1180 (3)
• Cis 1310 (3)
• Cis 2541 (4)
• Speec 1100 or 1120 or 1150 (3)
• Humanities and Fine Arts (3 to 4)

Third Semester (17 to 19 credits)
• Cis 2330 (3)
• Cis 2542 (4)
• Cis 2770 (3)
• Physical and Life Sciences (3 to 5)

Fourth Semester (16 credits)
• Cis 1230 (3)
• Cis 1450 (3)
• Cis 2790 (3)
• Social and Behavioral Sciences (3)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
http://www.cod.edu/programs/cis/

CIS.AAS.SOFTW (C++)
Program Electives .......................................................... 4 to 8
Only for the following emphases: Software Development: C++ Option, Java Option, or VB Option: (8 credits in single programming sequence)

- Cis 1510* Graphical User Interface Programming .......... 4
- Cis 2510* Advanced Graphic User Interface Programming ........................................... 4
- Cis 2541* C++ Language Programming ...................... 4
- Cis 2542* Advanced C++ Programming .............. 4
- Cis 2571* Introduction to Java ....................................... 4
- Cis 2572* Collections in Java .......................................... 4

* - course has a prerequisite

General Education .............................................................. 15 to 19
Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Software Development degree, some General Education courses are already listed under program requirements. Therefore, students need 15 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

- Oral: (3 credits) Speech 1100, 1120 or 1150

- Physical and Life Sciences: 3 to 5 credits
  At least one course with a laboratory component.

- Mathematics: 3 to 5 credits
  Select a minimum of 3 credits (1000 level or above).
  Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

- Humanities and Fine Arts: 3 credits

- Social and Behavioral Sciences: 3 credits

  Complete at least 2 credits from the list of courses in the
  Global/Multicultural Studies or Contemporary Life Skills Category.
  (Cis 1150 in program requirements fulfills this requirement)


<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
</tr>
</tbody>
</table>

Communication: 6 credits
Written: (3 credits) English 1101 or 1105
(English 1105 in program requirements fulfills this requirement)
Catalog Description

The Software Development degree program prepares students to work in the field of computer technology. This degree program requires 64 credits in program requirements, program electives, electives and general education as listed below.

Program Requirements ...................................................... 33

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 1150</td>
<td>Introduction to Computer Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1160</td>
<td>Windows Command Line</td>
<td>2</td>
</tr>
<tr>
<td>Cis 1180*</td>
<td>Introduction to Networking</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1230*</td>
<td>Microcomputer Database Application</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1310*</td>
<td>HTML and CSS</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1400*</td>
<td>Programming Logic and Technique</td>
<td>4</td>
</tr>
<tr>
<td>Cis 1450*</td>
<td>Introduction to Linux/Unix Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2330*</td>
<td>Introduction to XML</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2770</td>
<td>Introduction to System Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2790*</td>
<td>Systems Analyst Simulation</td>
<td>3</td>
</tr>
<tr>
<td>Engli 1105*</td>
<td>Writing for the Workplace</td>
<td>3</td>
</tr>
</tbody>
</table>

Emphases Courses ...................................................... 16

Choose One of the following Emphases: Software Development: C++, Java, Visual Basic (VB) or .NET

C++ Emphasis .................................................................... 8

This emphasis focuses on the creation, maintenance, and support of software applications in the C++ environment.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 2541*</td>
<td>C++ Language Programming</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2542*</td>
<td>Advanced C++ Programming</td>
<td>4</td>
</tr>
</tbody>
</table>

Java Emphasis .................................................................. 8

This emphasis focuses on the creation, maintenance, and support of software applications in the Java environment.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 2571*</td>
<td>Introduction to Java</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2572*</td>
<td>Collections in Java</td>
<td>4</td>
</tr>
</tbody>
</table>

Visual Basic Emphasis ................................................ 8

This emphasis focuses on the creation, maintenance, and support of software applications in the VB environment.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 1510*</td>
<td>Graphical User Interface Programming</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2510*</td>
<td>Advanced Graphical User Interface Programming</td>
<td>4</td>
</tr>
</tbody>
</table>

.NET Emphasis .......................................................... 12

This emphasis focuses on the creation, maintenance, and support of software applications in the .NET environment.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 1510*</td>
<td>Graphical User Interface Programming</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2350*</td>
<td>Introduction to ASP.NET</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2561*</td>
<td>Introduction to C# .NET</td>
<td>4</td>
</tr>
</tbody>
</table>

Suggested Course Sequence
(Full Time Enrollment)
(JAVA Emphasis)

Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

First Semester (15 credits)

- Cis 1150 (3)
- Cis 1160 (2)
- Cis 1400 (4)
- Engli 1105 (3)
- Math 1115 or 1428 or 1431 (3)

Second Semester (16 to 17 credits)

- Cis 1180 (3)
- Cis 1310 (3)
- Cis 2571 (4)
- Speec 1100 or 1120 or 1150 (3)
- Humanities and Fine Arts (3 to 4)

Third Semester (17 to 19 credits)

- Cis 2330 (3)
- Cis 2572 (4)
- Cis 2770 (3)
- Physical and Life Sciences (3 to 5)

Fourth Semester (16 credits)

- Cis 1230 (3)
- Cis 1450 (3)
- Cis 2790 (3)
- Social and Behavioral Sciences (3)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
http://www.cod.edu/programs/cis/
**Program Electives** .................................................. 4 to 8
Only for the following emphases: Software Development: C++ Option, Java Option, or VB Option: (8 credits in single programming sequence)
CIS 1510* Graphical User Interface Programming .......... 4
CIS 2510* Advanced Graphic User Interface Programming ........................................ 4
CIS 2541* C++ Language Programming .................. 4
CIS 2542* Advanced C++ Programming .................... 4
CIS 2571* Introduction to Java .................................. 4
CIS 2572* Collections in Java .................................. 4

* - course has a prerequisite

**General Education** .................................................. 15 to 19
Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Software Development degree, some General Education courses are already listed under program requirements. Therefore, students need 15 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

**Communication:** 6 credits
Written: (3 credits) English 1101 or 1105
(English 1105 in program requirements fulfills this requirement)
Oral: (3 credits) Speech 1100, 1120 or 1150

**Physical and Life Sciences:** 3 to 5 credits
At least one course with a laboratory component.

**Mathematics:** 3 to 5 credits
Select a minimum of 3 credits (1000 level or above).
Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

**Humanities and Fine Arts:** 3 credits

**Social and Behavioral Sciences:** 3 credits
Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.
(CIS 1150 in program requirements fulfills this requirement)

<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
</tr>
</tbody>
</table>

CIS.AAS.SOFTW (JAVA)
Catalog Description

The Software Development degree program prepares students to work in the field of computer technology. This degree program requires 64 credits in program requirements, program electives, electives and general education as listed below.

Program Requirements .................................................33
Cis 1150   Introduction to Computer Information Systems.................................3
Cis 1160   Windows Command Line ........................................2
Cis 1180*  Introduction to Networking ....................................3
Cis 1230*  Microcomputer Database Application ....................3
Cis 1310*  HTML and CSS ..................................................3
Cis 1400*  Programming Logic and Technique ..........................4
Cis 1450*  Introduction to Linux/Unix Operating Systems...............3
Cis 2330*  Introduction to XML ...........................................3
cis 2770   Introduction to System Analysis and Design ...........3
Cis 2790*  Systems Analyst Simulation .................................3
Engi 1105* Writing for the Workplace ................................3

Emphases Courses .....................................................16
Choose One of the following Emphases: Software Development: C++, Java, Visual Basic (VB) or .NET

C++ Emphasis .....................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the C++ environment.
Cis 2541*  C++ Language Programming .........................4
Cis 2542*  Advanced C++ Programming ............................4

Java Emphasis .....................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the Java environment.
Cis 2571*  Introduction to Java .........................................4
Cis 2572*  Collections in Java ...........................................4

Visual Basic Emphasis .....................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the VB environment.
Cis 1510*  Graphical User Interface Programming.................4
Cis 2510*  Advanced Graphical User Interface Programming..4

.NET Emphasis ..................................................................12
This emphasis focuses on the creation, maintenance, and support of software applications in the .NET environment.
Cis 1510*  Graphical User Interface Programming.................4
Cis 2350*  Introduction to ASP.NET.................................4
Cis 2561*  Introduction to C# .NET.................................4

Suggested Course Sequence
(Full Time Enrollment)
(.NET EMPHASIS)
Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

First Semester (15 credits)
  • Cis 1150 (3)
  • Cis 1160 (2)
  • Cis 1400 (4)
  • Engi 1105 (3)
  • Math 1115 or 1428 or 1431 (3)

Second Semester (16 credits)
  • Cis 1180 (3)
  • Cis 1310 (3)
  • Cis1510 (4)
  • Spec 1100 or 1120 or 1150 (3)
  • Humanities and Fine Arts (3)

Third Semester (16 to 18 credits)
  • Cis 1450 (3)
  • Cis 2330 (3)
  • Cis 2350 (4)
  • Cis 2770 (3)
  • Physical and Life Sciences (3 to 5)

Fourth Semester (17 to 18 credits)
  • Cis 1230 (3)
  • Cis 2561 (4)
  • Program Elective (4)
  • Cis 2790 (3)
  • Social and Behavioral Sciences (3 to 4)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
http://www.cod.edu/programs/cis/

CIS.AAS.SOFTW (.NET)
Program Electives ............................................. 4 to 8  
Only for the following emphases: Software Development: C++ Option, Java Option, or VB Option: (8 credits in single programming sequence)  
Cis 1510* Graphical User Interface Programming .......... 4  
Cis 2510* Advanced Graphic User Interface Programming .................................................. 4  
Cis 2541* C++ Language Programming ......................... 4  
Cis 2542* Advanced C++ Programming ....................... 4  
Cis 2571* Introduction to Java ................................... 4  
Cis 2572* Collections in Java .................................... 4  

* - course has a prerequisite

General Education ............................................. 15 to 19  
Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Software Development degree, some General Education courses are already listed under program requirements. Therefore, students need 15 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

Communication: 6 credits  
Written: (3 credits) English 1101 or 1105  
(English 1105 in program requirements fulfills this requirement)  
Oral: (3 credits) Speech 1100, 1120 or 1150

Physical and Life Sciences: 3 to 5 credits  
At least one course with a laboratory component.

Mathematics: 3 to 5 credits  
Select a minimum of 3 credits (1000 level or above).  
Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

Humanities and Fine Arts: 3 credits

Social and Behavioral Sciences: 3 credits

Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.  
(Cis 1150 in program requirements fulfills this requirement)

TOTAL CREDITS FOR AAS DEGREE  
64
Catalog Description

The Software Development degree program prepares students to work in the field of computer technology. This degree program requires 64 credits in program requirements, program electives, electives and general education as listed below.

Program Requirements .............................................33
Cis 1150 Introduction to Computer Information Systems.................................3
Cis 1160 Windows Command Line ....................................2
Cis 1180* Introduction to Networking ...................................3
Cis 1230* Microcomputer Database Application ....................3
Cis 1310* HTML and CSS .............................................3
Cis 1400* Programming Logic and Technique .....................4
Cis 1450* Introduction to Linux/Unix Operating Systems ......3
Cis 2330* Introduction to XML ......................................3
Cis 2770 Introduction to System Analysis and Design .......3
Cis 2790* Systems Analyst Simulation..............................3
Engl 1105* Writing for the Workplace ................................3

Emphases Courses .......................................................16
Choose One of the following Emphases: Software Development: C++, Java, Visual Basic (VB) or .NET

C++ Emphasis ................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the C++ environment.
Cis 2541* C++ Language Programming ............................4
Cis 2542* Advanced C++ Programming ............................4

Java Emphasis ................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the Java environment.
Cis 2571* Introduction to Java ........................................4
Cis 2572* Collections in Java ........................................4

Visual Basic Emphasis .....................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the VB environment.
Cis 1510* Graphical User Interface Programming...........4
Cis 2510* Advanced Graphical User Interface Programming........................................4

.NET Emphasis ............................................................12
This emphasis focuses on the creation, maintenance, and support of software applications in the .NET environment.
Cis 1510* Graphical User Interface Programming...........4
Cis 2350* Introduction to ASP.NET.................................4
Cis 2561* Introduction to C# .NET.................................4

Suggested Course Sequence (Full Time Enrollment) (Visual Basic)

Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

First Semester (15 credits)
- Cis 1150 (3)
- Cis 1160 (2)
- Cis 1400 (4)
- Engli 1105 (3)
- Math 1115 or 1428 or 1431 (3)

Second Semester (16 to 17 credits)
- Cis 1180 (3)
- Cis 1310 (3)
- Cis 1510 (4)
- Speec 1100 or 1120 or 1150 (3)
- Humanities and Fine Arts (3 to 4)

Third Semester (13 to 15 credits)
- Cis 2330 (3)
- Cis 2510 (4)
- Cis 2770 (3)
- Physical and Life Sciences (3 to 5)

Fourth Semester (12 to 13 credits)
- Cis 1230 (3)
- Cis 1450 (3)
- Cis 2790 (3)
- Social and Behavioral Sciences (3 to 4)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
http://www.cod.edu/programs/cis/
Program Electives..................................................4 to 8
Only for the following emphases: Software Development: C++ Option, Java Option, or VB Option: (8 credits in single programming sequence)
Cis  1510*  Graphical User Interface Programming........4
Cis  2510*  Advanced Graphic User Interface Programming.................................................4
Cis  2541*  C++ Language Programming ....................4
Cis  2542*  Advanced C++ Programming....................4
Cis  2571*  Introduction to Java ............................4
Cis  2572*  Collections in Java ............................4

* - course has a prerequisite

General Education.................................................15
Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Software Development degree, some General Education courses are already listed under program requirements. Therefore, students need 15 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

Communication: 6 credits
Written: (3 credits) English 1101 or 1105
(English 1105 in program requirements fulfills this requirement)
Oral: (3 credits) Speech 1100, 1120 or 1150

Physical and Life Sciences: 3 to 5 credits
At least one course with a laboratory component.

Mathematics: 3 to 5 credits
Select a minimum of 3 credits (1000 level or above).
Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

Humanities and Fine Arts: 3 credits

Social and Behavioral Sciences: 3 credits

Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.
(Cis 1150 in program requirements fulfills this requirement)

TOTAL CREDITS FOR AAS DEGREE
64
Career Information  CIS.AAS.SOFTW

Job Title(s): Software Developers, Systems Software
Developer, Infrastructure Engineer, Network Engineer, Publishing Systems Analyst, Senior Software Engineer, Software Architect, Software Developer, Software Engineer, Systems Coordinator, Systems Engineer

For salary and wage information, please visit: www.onetonline.org

If you would like information regarding internships, resume development, interviewing and job search skills, please contact the Career Services Center

Phone: 630-942-2230
www.cod.edu/careerservices  Twitter: @codcareercenter

Related Occupations:
Computer Systems Analysts  Computer Programmers
Information Security Analysts  Web Developers
Computer Network Architects  Database Administrators
Software Developers, Applications  Software Quality Assurance Engineers and Testers
The Application and Technical Support Specialist program prepares students to work in the field of computer technology. This degree program requires a minimum of 64 credits in general education, program electives and program requirements, as listed below.

Catalog Description

The Application and Technical Support Specialist program prepares students to work in the field of computer technology. This degree program requires a minimum of 64 credits in general education, program electives and program requirements, as listed below.

Program Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 1150</td>
<td>Introduction to Computer Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1160</td>
<td>Windows Command Line</td>
<td>2</td>
</tr>
<tr>
<td>Cis 1180</td>
<td>Introduction to Networking</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1205</td>
<td>Office Suite Software Integration</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1310</td>
<td>HTML and CSS</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1400</td>
<td>Programming Logic and Technique</td>
<td>4</td>
</tr>
<tr>
<td>Cis 1450</td>
<td>Introduction to Linux/Unix Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1610</td>
<td>Windows Client OS</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2770</td>
<td>Introduction to System Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>Busin 1111</td>
<td>Customer Service</td>
<td>3</td>
</tr>
<tr>
<td>Cit 1100</td>
<td>PC Maintenance &amp; Upgrading</td>
<td>2</td>
</tr>
<tr>
<td>Engli 1105</td>
<td>Writing for the Workplace</td>
<td>3</td>
</tr>
</tbody>
</table>

* - course has a prerequisite

Program Electives

Select 14 to 18 hours from any Cis courses except Cis 1110.

General Education

Select 15 to 19 credits

Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Application and Technical Support Specialist degree, some General Education courses are already listed under program requirements. Therefore, students need 15 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

Communication: 6 credits
Written: (3 credits) English 1101 or 1105
(English 1105 in program requirements fulfills this requirement)
Oral: (3 credits) Speech 1100, 1120 or 1150

Physical and Life Sciences: 3 to 5 credits
At least one course with a laboratory component.

Mathematics: 3 to 5 credits
Select a minimum of 3 credits (1000 level or above).

Suggested Course Sequence

(Full Time Enrollment)

Please note: A student's readiness to perform college-level coursework is based on the student's placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

First Semester (16 credits)
- Engli 1105 (3)
- Cis 1150 (3)
- Math 1115 (3)
- Cis 1160 (2)
- Cit 1100 (2)
- Busin 1111 (3)

Second Semester (16 credits)
- Speec 1100 or 1120 or 1150 (3)
- Cis 1180 (3)
- Cis 1205 (3)
- Cis 1400 (4)
- Humanities and Fine Arts (3)

Third Semester (16 to 18 credits)
- Cis 1310 (3)
- Cis 1610 (3)
- Program Elective (3 to 4)
- Program Elective (3 to 4)
- Physical and Life Sciences (4)

Fourth Semester (16 credits)
- Cis1450 (3)
- Cis 2770 (3)
- Program Elective (3)
- Program Elective (4)
- Social and Behavioral Sciences (3)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
http://www.cod.edu/programs/cis/
Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

**Humanities and Fine Arts:** 3 credits

**Social and Behavioral Sciences:** 3 credits

Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category. *(Cis 1150 in program requirements fulfills this requirement)*

<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>64 to 72</td>
</tr>
</tbody>
</table>
Career Information  CIS.AAS.TECH

Job Title(s): Software Developers, Systems Software
Software Engineer, Application Integration Engineer, Programmer Analyst,
Software Development Engineer, Computer Consultant, Software Architect,
Software Developer, Technical Consultant, Applications Developer, Business
Systems Analyst

For salary and wage information, please visit: www.onetonline.org

If you would like information regarding internships, resume development,
interviewing and job search skills, please contact the Career Services Center

Phone: 630-942-2230
www.cod.edu/careerservices  Twitter: @codcareercenter

Related Occupations:
Computer Systems Analysts  Computer Programmers
Information Security Analysts  Web Developers
Computer Network Architects  Database Administrators
Computer Systems Engineers/Architects  Software Quality Assurance
                                Engineers and Testers